



STIC Search Report

EIC 1700

STIC Database Tracking Number: 159492

TO: John Chu
Location: REM 9D51
Art Unit : 1752
July 29, 2005

Case Serial Number: 10/690779

From: Usha Shrestha
Location: EIC 1700
REMSEN 4B28
Phone: 571/272-3519
usha.shrestha@uspto.gov

Search Notes



STIC Search Results Feedback Form

EIC17000

Questions about the scope or the results of the search? Contact *the EIC searcher* or contact:

Kathleen Fuller, EIC 1700 Team Leader
571/272-2505 REMSEN 4B28

Voluntary Results Feedback Form

- I am an examiner in Workgroup: Example: 1713
➤ Relevant prior art **found**, search results used as follows:

- ☐ 102 rejection
- ☐ 103 rejection
- ☐ Cited as being of interest.
- ☐ Helped examiner better understand the invention.
- ☐ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature
(journal articles, conference proceedings, new product announcements etc.)

➤ Relevant prior art **not found**:

- ☐ Results verified the lack of relevant prior art (helped determine patentability).
- ☐ Results were not useful in determining patentability or understanding the invention.

Comments:

Drop off or send completed forms to EIC1700 REMSEN 4B28

Mellerson, Kendra

From: Unknown@Unknown.com
Sent: Thursday, July 14, 2005 4:41 PM
To: STIC-EIC1700
Subject: Generic form response

ResponseHeader=Commercial Database Search Request

AccessDB#= 159492

LogNumber= _____

Searcher= _____

SearcherPhone= _____

SearcherBranch= _____

MyDate=Thu Jul 14 16:40:14 EDT 2005

submitto=STIC-EIC1700@uspto.gov

Name=John Chu

Empno=68314

Phone=272-1329

Artunit=1752

Office=Rem 9d-51

Serialnum=10/690,779

PatClass=403/157

Earliest=10/23/2002

Format1=paper

Searchtopic=Please search the claimed recording material. Look for the coupler compound of Formula (I), which is where the invention is located. The diazo compound is known to be used with other couplers (hydroxyl containing compounds).

Thank you!
John

Comments=

send=SEND

SCIENTIFIC REFERENCE BR
Sci & Tech Inf. Ctr

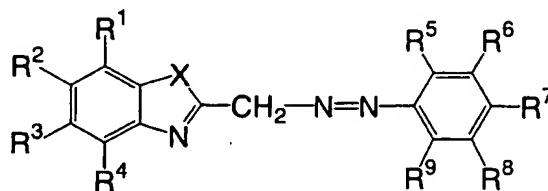
JUL 15 RECD

Pat. & T.M. Office

ABSTRACT OF THE DISCLOSURE

A recording material comprises, on a support, a recording layer including a diazo compound, a coupler compound that can react with the diazo compound to form a color, and a metal salt, wherein the coupler compound is represented by the general formula (1):

General formula (1)



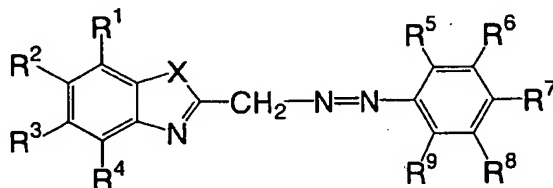
wherein R¹, R², R³, and R⁴ each independently represent a hydrogen atom, an alkyl group, an aryl group, an alkoxy group, or an amino group; R⁵, R⁶, R⁷, R⁸, and R⁹ each independently represent a hydrogen atom, a halogen atom, an alkyl group, an aryl group, an alkoxy group, an aryloxy group, an alkylthio group, an arylthio group, an alkylsulfonyl group, an arylsulfonyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, an acyloxy group, an acyl group, a carbamoyl group, an acylamino group, a sulfamoyl group, a sulfonamide group, a cyano group, or a nitro group; and X represents an oxygen atom or a sulfur atom.

WHAT IS CLAIMED IS:

1. A recording material comprising: on a support, a recording layer including a diazo compound, a coupler compound that can react with the diazo compound to form a color, and a metal salt, wherein

the coupler compound is represented by the general formula (1):

General formula (1)



wherein R¹, R², R³, and R⁴ each independently represent a hydrogen atom, an alkyl group, an aryl group, an alkoxy group, or an amino group; R⁵, R⁶, R⁷, R⁸, and R⁹ each independently represent a hydrogen atom, a halogen atom, an alkyl group, an aryl group, an alkoxy group, an aryloxy group, an alkylthio group, an arylthio group, an alkylsulfonyl group, an arylsulfonyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, an acyloxy group, an acyl group, a carbamoyl group, an acylamino group, a sulfamoyl group, a sulfonamide group, a cyano group, or a

nitro group; any of R¹ to R⁹ may have a substituent; and X represents an oxygen atom or a sulfur atom.

2. The recording material according to claim 1, wherein at least one of R¹, R², R³, and R⁴ in the general formula (1) is a hydrogen atom, an alkyl group or an alkoxy group.

3. The recording material according to claim 1, wherein at least one of R¹, R², R³, and R⁴ in the general formula (1) is a hydrogen atom or an alkoxy group.

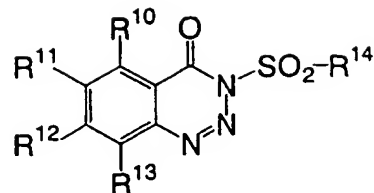
4. The recording material according to claim 1, wherein at least one of R⁵, R⁶, R⁷, R⁸, and R⁹ in the general formula (1) is a hydrogen atom, a halogen atom, an alkyl group, an aryl group, an alkoxy group, an alkoxycarbonyl group, or an acyl group.

5. The recording material according to claim 1, wherein at least one of R⁵, R⁶, R⁷, R⁸, and R⁹ in the general formula (1) is a hydrogen atom, a halogen atom, an alkyl group, an aryl group, or an alkoxy group.

6. The recording material according to claim 1, wherein the coupler compound has a solid content of 0.02 g/m² to 5 g/m².

7. The recording material according to claim 1, wherein the diazo compound is a compound represented by the following the general formula (2):

General formula (2)



wherein R¹⁰, R¹¹, R¹², and R¹³ each independently represent a hydrogen atom, a halogen atom, an alkyl group, an aryl group, an alkoxy group, an aryloxy group, an alkylthio group, an arylthio group, an alkylsulfonyl group, an arylsulfonyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, an acyloxy group, an acyl group, a carbamoyl group, an acylamino group, a sulfamoyl group, a sulfonamide group, a cyano group, or a nitro group; and R¹⁴ represents an alkyl group or an aryl group.

8. The recording material according to claim 7, wherein at least one of R¹⁰, R¹¹, R¹², and R¹³ in the general formula (2) is a hydrogen atom, a halogen atom, an alkylsulfonyl group, an arylsulfonyl group, an acyl group, a cyano group, or a nitro group.

9. The recording material according to claim 1, wherein the diazo compound has a solid content of 0.02 g/m² to 5 g/m².

10. The recording material according to claim 1, wherein the metal salt is a divalent metal salt.

11. The recording material according to claim 1,

wherein the metal salt is at least one selected from the group consisting of zinc sulfate, zinc chloride, zinc 2-ethylhexanoate, copper sulfate, manganese chloride, aluminum sulfate, nickel chloride, cobalt chloride, and iron nitrate.

12. The recording material according to claim 1, wherein the metal salt is at least one selected from the group consisting of zinc 2-ethylhexanoate, zinc sulfate and zinc chloride.

13. The recording material according to claim 1, wherein the metal salt has a solid content of 0.002 g/m² to 5 g/m².

14. The recording material according to claim 1, wherein the recording layer is a thermal recording layer in which a color is formed by the application of heat.

15. The recording material according to claim 1, wherein the diazo compound is encapsulated in microcapsules.

16. The recording material according to claim 1, wherein both the diazo compound and the metal salt are encapsulated in microcapsules.

17. The recording material according to claim 16, wherein the microcapsules have a capsule wall comprising at least one of polyurethane and polyurea.

18. The recording material according to claim 1,

wherein the recording layer includes an organic base.

19. The recording material according to claim 1,
wherein the recording layer includes a coloring aid.

20. The recording material according to claim 1,
wherein a protective layer is disposed on the recording
layer.

=> FIL REG

FILE 'REGISTRY' ENTERED AT 10:43:03 ON 29 JUL 2005

=> d his

FILE 'HCAPLUS' ENTERED AT 09:49:52 ON 29 JUL 2005

L1 1 S US20040082472/PN
SEL RN

FILE 'REGISTRY' ENTERED AT 09:50:19 ON 29 JUL 2005

L2 5 S E1-E5

FILE 'LREGISTRY' ENTERED AT 09:58:18 ON 29 JUL 2005

L3 STR

FILE 'REGISTRY' ENTERED AT 10:01:39 ON 29 JUL 2005

L4 3 S L3
L5 17 S L3 FUL
L6 2 S L2 AND L5
SAV L5 CHU779/A

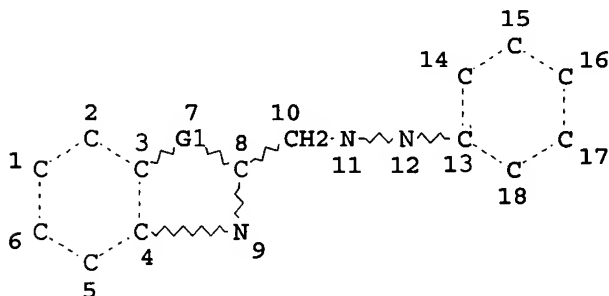
FILE 'HCAPLUS' ENTERED AT 10:21:35 ON 29 JUL 2005

L7 3 S L5

FILE 'REGISTRY' ENTERED AT 10:43:03 ON 29 JUL 2005

=> d que 17

L3 STR



VAR G1=S/O

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 18

STEREO ATTRIBUTES: NONE

L5 17 SEA FILE=REGISTRY SSS FUL L3

L7 3 SEA FILE=HCAPLUS ABB=ON PLU=ON L5

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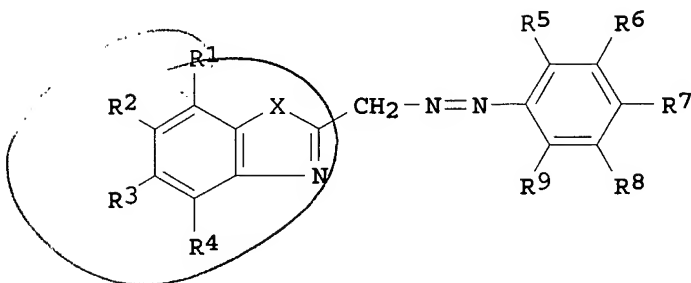
FILE 'HCAPLUS' ENTERED AT 10:43:22 ON 29 JUL 2005

=> d 17 1-3 ibib abs hitstr hitind

L7 ANSWER 1 OF 3 HCAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2004:353129 HCAPLUS
 DOCUMENT NUMBER: 140:383145
 TITLE: Recording material
 INVENTOR(S): Takeuchi, Yohsuki; Arai, Yoshimitsu;
 Yanagihara, Naoto
 PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
 SOURCE: U.S. Pat. Appl. Publ., 17 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004082472	A1	20040429	US 2003-690779	2003 1023
JP 2004142203	A2	20040520	JP 2002-308444	2002 1023
PRIORITY APPLN. INFO.:			JP 2002-308444	A 2002 1023

OTHER SOURCE(S): MARPAT 140:383145
 GI



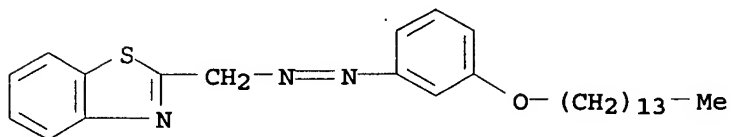
I

AB A recording material comprises, on a support, a recording layer including a diazo compound, a coupler compound that can react with the diazo compound to form a color, and a metal salt, wherein the coupler compound is represented by the general formula I (R1-4 = H, alkyl group, aryl group, alkoxy group, amino group; R5-9 = H, halogen atom, alkyl group, aryl group, alkoxy group, aryloxy group, alkylthio group, arylthio group, alkylsulfonyl group, arylsulfonyl group, alkoxycarbonyl group, aryloxycarbonyl group, acyloxy group, acyl group, carbamoyl group, acylamino group, sulfamoyl group, sulfonamide group, cyano group, nitro group; and X = oxygen atom or a sulfur atom).

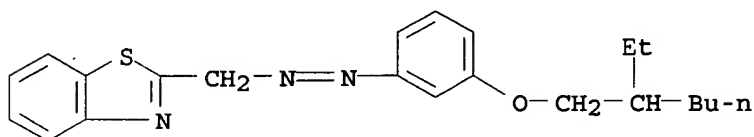
IT 683262-65-9 683262-66-0

(coupler; thermal recording material containing)

RN 683262-65-9 HCAPLUS

CN Benzothiazole, 2-[[[3-(tetradecyloxy)phenyl]azo]methyl]- (9CI)
(CA INDEX NAME)

RN 683262-66-0 HCAPLUS

CN Benzothiazole, 2-[[[3-[(2-ethylhexyl)oxy]phenyl]azo]methyl]- (9CI)
(CA INDEX NAME)

IC ICM B41M005-20

INCL 503227000

CC 74-7 (Radiation Chemistry, Photochemistry, and Photographic and
Other Reprographic Processes)

IT 683262-65-9 683262-66-0

(coupler; thermal recording material containing)

L7 ANSWER 2 OF 3 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1955:69057 HCAPLUS

DOCUMENT NUMBER: 49:69057

ORIGINAL REFERENCE NO.: 49:13223b-d

TITLE: Coupling of diazonium compounds with
2-methylbenzothiazoles

AUTHOR(S): Pierrot, Francois; Wahl, Henri

SOURCE: Compt. rend. (1954), 239, 1049-51

DOCUMENT TYPE: Journal

LANGUAGE: Unavailable

GI For diagram(s), see printed CA Issue.

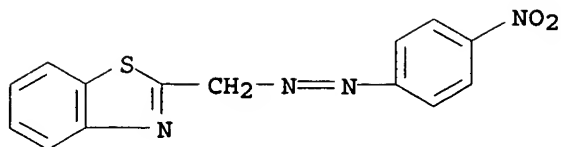
AB o-C6H4.S.CMe:NMe+X-couples with diazonium salts to give
o-C6H4.NMe.C[:C(N2R)2].S. o-O2NC6H4NH2 diazotized
and treated with an equimolar amount of 2-methylbenzothiazole in
AcOH at pH between 0.75 and 2 gives an orange-red precipitate which is a
mixture, one component being o-C6H4.N:C(CH2N:NC6H4NO2-
o).S (I), separated by dissolving in hot acetone, pale yellow
needles, m. 271.5° (from alc.). That coupling occurred at
the 2-position was established by the identical spectra of
2-formylbenzothiazole o-nitrophenyl hydrazone (II), m.
271.5° (C.A. 31, 3050.2) and I. Both I or II with MeI give
o-C6H4.NMe.C(:CHN:NC6H4NO2-o).S identical with the
product from treating 2,3-dimethylbenzothiazolium Me sulfate with
p-O2NC6H4NHNO.

IT 855464-87-8, Benzothiazole, 2-[(p-nitrophenylazo)methyl]-
(preparation of)

RN 855464-87-8 HCAPLUS

CN Benzothiazole, 2-[(p-nitrophenylazo)methyl]- (5CI) (CA INDEX

NAME)



CC 10 (Organic Chemistry)

IT 855464-87-8, Benzothiazole, 2-[(p-nitrophenylazo)methyl]-
(preparation of)

L7 ANSWER 3 OF 3 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1953:20701 HCAPLUS

DOCUMENT NUMBER: 47:20701

ORIGINAL REFERENCE NO.: 47:3567i,3568h-i,3569a

TITLE: Bisazo dyes derived from 2,3-dimethylbenzothiazolium salts

AUTHOR(S): Wahl, Henri; Lebris, Marie Therese

SOURCE: Compt. rend. (1952), 235, 1405-6

DOCUMENT TYPE: Journal

LANGUAGE: Unavailable

AB A crystalline compound, m. 248°, λ_{maximum} 450 m μ , corresponding to a tautomer of 3-methyl-2-(phenylazomethyl)benzothiazolium methosulfate and 3-methyl-2-(phenylhydrazonomethyl)benzothiazolium methosulfate (I-methosulfate), was obtained by heating an alc. solution of a 2,3-dimethylbenzothiazolium salt (II) with diazoaminobenzene. I-Chloride, m. 219°, λ_{maximum} 450 m μ , was produced directly from I or by transforming II to the azomethine (III) (methosulfate, m. 194-5°) with p-nitrosodimethylaniline and treating III in HCl with PhNHNH₂. I-Nitrate, m. 263°, was also prepared I coupled in pyridine with PhN₂Cl to form 3-methyl-2-[bis(phenylazo)methylene]benzothiazoline, m. 183° (from alc.), identical with that obtained by direct diazo coupling of II. III and p-O₂NC₆H₄NHNH₂ gave the p-nitro analog of I-nitrate, m. 241-2°, which coupled with p-O₂NC₆H₄N₂Cl to produce 3-methyl-2-[bis(p-nitrophenylazo)methylene]benzothiazoline, m. 287° (from pyridine), λ_{maximum} 490 m μ .

IT 855467-05-9, Benzothiazolium, 3-methyl-2-[(p-nitrophenylazo)methyl]-, nitrate
(preparation of)

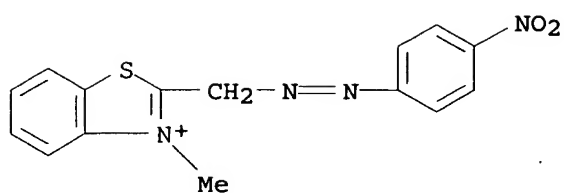
RN 855467-05-9 HCAPLUS

CN Benzothiazolium, 3-methyl-2-[(p-nitrophenylazo)methyl]-, nitrate
(5CI) (CA INDEX NAME)

CM 1

CRN 855467-04-8

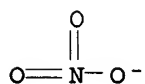
CMF C15 H13 N4 O2 S



CM 2

CRN 14797-55-8

CMF N 03



CC 25 (Dyes and Textiles Chemistry)

IT 29770-20-5, Benzothiazoline, 2-[bis(phenylazo)methylene]-3-methyl-
854091-12-6, Benzothiazolium, 3-methyl-2-[(p-
nitrophenyl)hydrazonomethyl]-, nitrate 855467-05-9,
Benzothiazolium, 3-methyl-2-[(p-nitrophenylazo)methyl]-, nitrate
(preparation of)